Effect of sea coral implantation on chromosomes in rabbits

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Study on the cytotoxicity and chromosome aberration following implantation of sea coral in rabbits

Abstract

Coral has been used as a bone substitute in many experimental studies. It has been proven to be biocompatible, biodegradable and easy to handle; and it has not been found to cause any inflammatory responses. The present study was undertaken to determine the cytotoxicity in terms of mitotic index as well as the clastogenic effect (chromosome aberration) of sea coral implantation in rabbits. The animals comprised of five male adult healthy New Zealand White (Oryctolagus cuniculus) rabbits. The biomaterial, sea coral granules used in this study was obtained from Porites species and processed by the tissue bank of Universiti Sains Malaysia, Health Campus, Kubang Kerian, Malaysia. The blood samples were collected twice from the rabbits, once before the implantation of the sea coral granules (which acted as the control) and the other, one week after the implantation (which acted as the treatment) and lymphocyte cultures were set up. The cultures were then harvested and the chromosomes were prepared for analysis. The diploid number of chromosomes in the rabbits (Oryctolagus cuniculus) was found to be 44. Mean mitotic indices of 3.84 ± 0.54 per cent and 3.76 ± 0.23 per cent were obtained before and after implantation of sea coral granules respectively. There were no structural or numerical chromosomal aberrations observed in both the cases. The mitotic index values and chromosomal analyses in this preliminary study carried out indicate that the biomaterial, sea coral granules is non-cytotoxic and non-clastogenic under the present test conditions.

Keyword : sea, coral, cytotoxicity, chromosome, aberration,

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